

THE AEROPLANE

SPOTTER

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FOR THE ALERT

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THURSDAYS

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TANK-BUSTER.—The first photograph to be released for publication of the Hurricane II tank-buster equipped with 40 mm. (1.575 in.) cannon. These cannon, which are slung one under each wing, are designed primarily to attack tanks and other armoured vehicles. They weigh 320 lb. each and have tremendous hitting power.

JUST as in the past different aircraft manufacturing companies have tended to specialise in different categories of aircraft, so to-day the same trend can be observed in apportioning the design effort between Great Britain and America.

Hawker Aircraft, Ltd., and, during the past six years, the Supermarine Aviation Works have specialised on fighters. Their products lead the World. Similarly Rolls-Royce liquid-cooled motors stand in a class by themselves. The firm of Short Bros., now passing through an unhappy period, has produced some of the best flying-boats ever made. A. V. Roe and Co., Ltd., which built up a reputation with Avro 504, Tutor and Cadet trainers, now forges ahead in the heavy bomber field in which Handley Page, Ltd., has long specialised and is still well to the fore. The Bristol Aeroplane Company continues a great tradition in the medium, general purpose and torpedo-bomber category, while the de Havilland Aircraft Co., Ltd., has produced the World's fastest bomber and two-seat multi-motor fighter in the Mosquito.

For the future in the larger field of the World at War, the British and American Aircraft Industries appear to be concentrating to avoid uneconomic overlapping.

British fighters are acknowledged as supreme. The latest versions of the Spitfire and the Typhoon are unequalled, while the Hurricane tank-buster opens up new tactical possibilities from the air. As an intruder fighter and high-speed bomber the Mosquito is far ahead of any contemporary type. The Bristol Beaufighter with Hercules motors is unchallenged by any other aeroplane as a night-fighter, long-range destroyer and torpedo dropper. Its armament is far more deadly than any other two-motor fighter except the Mosquito—and it has an advantage of two machine-guns over even that. The British Aircraft Industry in its great but dispersed state is particularly suited to produce aeroplanes of the class of the Spitfire, Typhoon, Hurricane tank-buster, Mosquito and Beaufighter. We are likely to lead the World in those categories for some time to come.

In the medium bomber field America has the advantage. The Mitchell has done very well and proved itself a great aeroplane in action. It is certainly a good deal ahead of the Marauder in all-round operational efficiency, just as the Mosquito II is well in advance of the Lightning in its different class. At present American aircraft and American armament lead the World in the medium bombers.

In the heavies the position is perhaps most interesting of all. There is no doubt that the Avro Lancaster is the best British heavy bomber, by a substantial margin; followed by the Halifax. Furthermore, the Lancaster takes about half the man-hours of any comparable type—British or American—to build. Its bomb load and the size of bomb it can carry are far greater than those of the Fortress or Liberator. In fact, for night operations the Lancaster has no equal in service.

For daylight work the problems are different. The large formations of Fortress and Liberator bombers have shown that their cross-fire is extremely effective in keeping the enemy fighters at a distance and in enabling the formations to get to and from their targets with losses which, on a percentage basis, are no higher than those suffered by Bomber Command at night. The Fortress is constructionally and operationally a daylight bomber and its crews are trained for day work. Nor should they be turned to night bombing because by keeping up the daylight offensive they stretch the enemy defences to the uttermost, causing them to remain at the ready day and night, never knowing whether they must meet a high or low raid at any time during the 24 hours. Furthermore, daylight raiding interferes greatly with the enemy production by driving workers to the shelters, quite apart from the damage caused.

In air transports the Americans reign supreme at present. Our only representative, the Avro York, has the Lancaster wings and tail and so cannot be expected to be so efficient as would be a transport designed as such from the start. There is pressing need for a much more realistic Government policy on Empire air transport now—for the R.A.F. Air Transport Command is not a full solution.

Finally, in Naval types Great Britain and America share the honours. The Seafire is probably the finest naval fighter in the World to-day, not excepting the Corsair. The Seafire is a proved hard-hitting, highly manoeuvrable and fast aeroplane with all the experience of the Spitfire behind it. The Corsair, less heavily armed and much heavier, is a relatively untried type.

Naval torpedo-bombers are in the process of appearing in new forms. We are not yet permitted to describe or illustrate the British Barracuda. The American Grumman Avenger is good, and although it has certain drawbacks, is probably the best of its class to-day with an advantage over the Barracuda which was originally designed for the now defunct Rolls-Royce Vulture X-type motor.

Thus in the various categories British fighters and light bombers are ahead of anything else in the World. The British heavies are best at night, but, unless and until they get more powerful armament, the Fortress and Liberator are superior by day. We have tripped up badly in neglecting to adopt the half-inch machine-gun for bombers long ago. In the next generation of heavy bombers America is likely to go ahead for her production facilities are so much greater and they can be delivered by air. We are reaching a stage when the British Aircraft Industry is likely to concentrate on fighters and the lighter bombers. But that does not mean that the Lancaster or Halifax will be out of production for a long time to come.

Most important of all is research. On it depends the quality of our aircraft in the future. At present America is devoting far more man-power and time to research than we are here. If we want to keep the best aircraft in the categories where we shine best, a much more intensive programme of research and development is needed. And the time to begin is now.

THE NEWS OF THE WEEK

PRONUNCIATION OF SOME AERONAUTICAL WORDS

SOME two years ago, on Feb. 20, 1941, in No. 8 of THE AEROPLANE SPOTTER, we gave a list of the accepted pronunciation of the names of aircraft and of aeronautical terms.

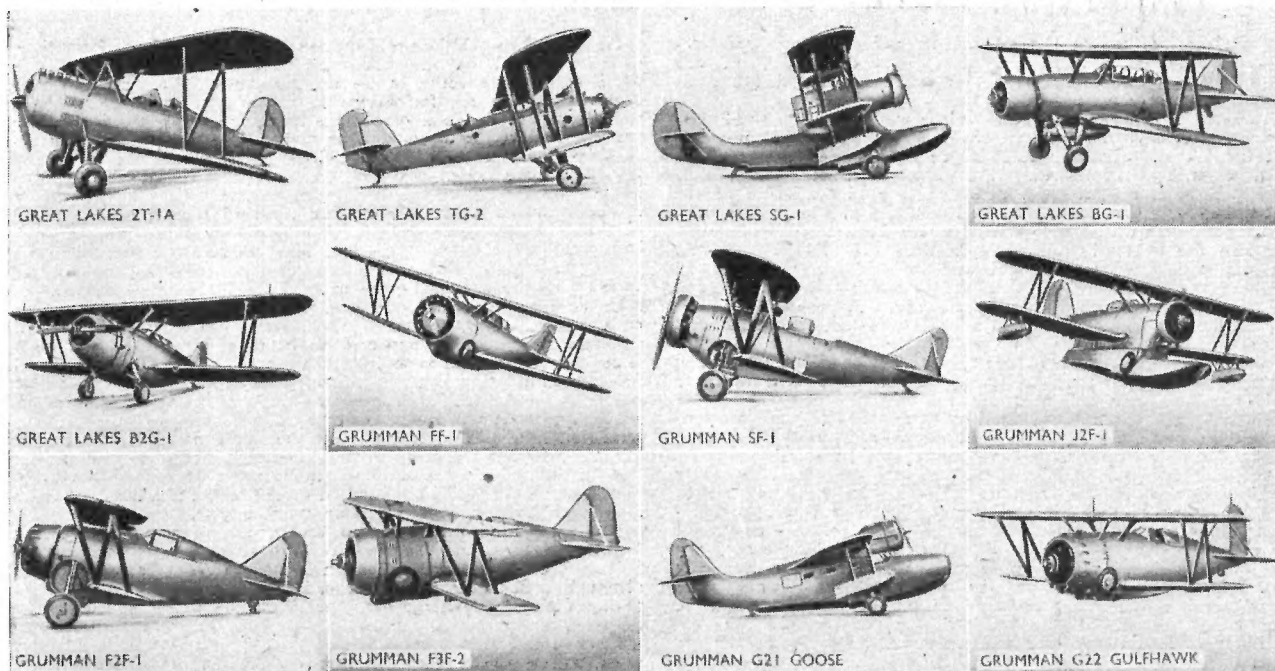
The following is an expansion of that early list, with many additions made necessary by the passage of time. In each instance we have endeavoured to give phonetically as near the correct pronun-

ciation as possible. We trust that Scots, Americans and others will make allowance for phonetic spelling which may not exactly fit their own tongue.

As we have commented before, the classic example of confusion in pronunciation is that between Anson and Ensign when the latter is pronounced nautically "Ens'n." In the list below the emphasis is on the syllable shown in black type.

WORD	PRONUNCIATION	WORD	PRONUNCIATION	WORD	PRONUNCIATION
Aichi	Ay-chee	Dirigible	Dir-ridge-able	Mariner	Mar-in-er
Aileron	Ale-er-on	Empennage	On-pen-ahge	Mitsubishi	Mit-soo-bish-y
Airacobra	Air-ah-ko-bra	Ensign	Enn-sign	Morane-Saulnier	Mor-rahne-sole-nyeh
Aldon	All-donn	Fiat	Fee-at	Nacelle	Nass-celle
Arado	Ah-rah-doe	Fieseler	Fee-ze-ler	Nakajima	Nack-eh-jyne-er
Audax	Aw-dax	Focke-Wulf	Fokk-cuh-Vulf	Nomad	No-mad
Auster	Aw-ster	Fulmar	Full-mar	Noorduyn	Nore-dyne
Autogyro	Aw-toe-jire-o	Fuselage	Fuze-se-lahge	Pegasus	Peg-a-suss
Aviation	Ay-viay-shun	Gills	Gills ("g" as in girl)	Perseus	Per-syooss
Baltimore	Ball-te-more	Goëland	Go-land	Piaggio	Pee-aj-o
Barracuda	Barra-kood-ah	Gotha	Goat-ah	Pitot	Pee-toe
Beaufort	Bo-fort	Grumman	Grumm-man	Potez	Poat-ez
Bellanca	Bell-ank-ah	Gyroplane	Jire-o-plane	Powis	Pow-iss
Blenheim	Blen-im	Hampden	Hamm-den	Rata	Rah-tah
Bloch	Blockh	Heinkel	Hyne-kel	Reggiane	Rej-e-ahney
Blohm & Voss	Blowme-unt-Foss	Henschel	Hen-schel	Savoia-Marchetti	Sav-oy-ya-mar-keh-tee
Bolingbroke	Bowl-ing-broke	Hirth	Heert	Scion	Sigh-on
Breda	Bray-da	Iliuchin	Ill-iyou-chin	Seversky	Sev-erse-kiee
Breguet	Bregg-ay	Junkers	Yoong-kers	Siebel	Zee-ble
Bücker	Bouk-er	Jungmeister	Yoong-my-ster	Sigrist	Sigg-rist
Catalina	Cat-a-lee-na	Kurier	Koor-er	Sikorsky	Sick-orse-skee
Caudron	Kode-ron	Latécoère	Lat-eh-ko-air	S-00	Ess-double-oh
Chesapeake	Chess-a-peke	Lerwick	Lur-wick	Stratus	Strah-tuss
Cierva	See-air-va	Lioré et Olivier	Lee-or-ray-ay-tolivv-iyay	Taurus	Taw-russ
Coronado	Kor-oh-nah-doe	Longitude	Lon-ji-tude	Ventura	Ten-ture-ah
Cygnét	Cigg-net	Luftwaffe	Loof-taff-er	Vildebeeste	Vill-de-beast
Daimler-Benz	Dime-ler-bents	Lycoming	Ly-kome-ing	Vought-Sikorsky	Vawt-sick-orse-skee
Dakota	Dah-koat-a	Macchi	Mah-kee	Wapati	Wop-it-tee
Dewoitine	Dev-wa-teen	Magister	Maj-is-ter	Wichita	Witch-it-ah
Dihedral	Die-heed-ral	Marauder	Ma-law-der		

THE SPOTTERS' A.B.C.—LII



ALL AMERICAN.—In October, 1935, the Bell Aircraft Corporation bought at a public auction all the rights to the manufacture and sale of the Great Lakes BG-1 dive bomber, then in production for the U.S. Navy. The Bell Corporation also took over the maintenance and repair of earlier Great Lakes types. Of these the 2T-1A is a trainer with a 90 h.p. American Cirrus III motor and a top speed of 110 m.p.h. The TG-2 is a three-seat torpedo-bomber biplane, now obsolete. Forty were built for the U.S. Navy. The top speed is 128 m.p.h. with a 575 h.p. Cyclone. The SG-1 observation amphibian was of unconventional design and had a top speed of 124 m.p.h. with a 400 h.p. Wasp Junior. The BG-1 scout dive bomber has a top speed of 210 m.p.h. (755 h.p. Cyclone motor). Forty-four were built for the U.S. Navy by Great Lakes in 1935 and 16 more by Bell in 1936. The B2G-1 is a development with retractable undercarriage. The Grumman Aircraft Engineering Corporation has always concentrated on naval aircraft with great success. The FF-1 and SF-1 are basically similar, a two-seat fighter and a scout-fighter. Both have a top speed of 216 m.p.h. with a 770 h.p. Cyclone and from them all other Grumman fighters have developed.

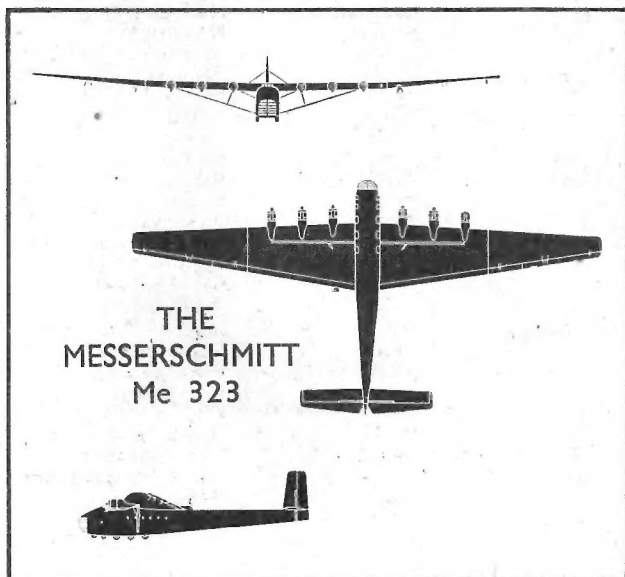
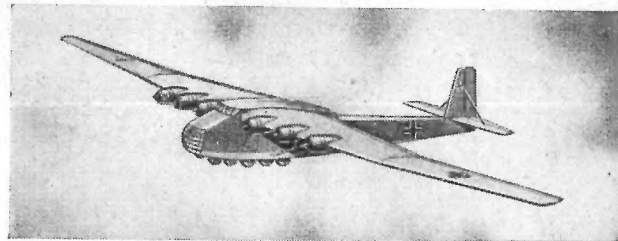
More than 100 J2F-1 amphibian fighters were serving in the U.S. Navy in 1939. They are used also by the U.S. Coast Guard and eight were built for the Argentine Navy. A Coast Guard JF-2, a slight variant of the J2F-1, held a World's Speed Record for amphibians at 180 m.p.h. (750 h.p. Cyclone). The Grumman F2F-1 corresponded to the Gloster Gladiator but has a retracting undercarriage. Its top speed is 240 m.p.h. with a 650 h.p. Wasp Junior. Span, 28 ft. 6 in. The F3F-2 has a top speed of 270 m.p.h. (750 h.p. Cyclone). Span, 32 ft. 0 in. A total of 135 were delivered to the U.S. Navy around 1936. The G-21 Goose first appeared early in 1937 for private and commercial use. It is now in service with U.S. Navy, R.A.F., R.C.A.F., F.A.A., A.T.A., etc. Top speed 201 m.p.h. (two 450 h.p. Wasp Juniors). The G-22 Gulfhawk is a special version of the F3F-2 built for aerobatics to the order of Major Al Williams and flown in Great Britain by him at the Gatwick Air Display in 1939. The Gulfhawk has very high load factors and a specially large tail unit for manoeuvrability. The top speed is 290 m.p.h. (1,000 h.p. Cyclone motor).

AIRCRAFT IN THE NEWS—LXXXII

THE MESSERSCHMITT Me 323

A NUMBER of Messerschmitt Me 323 six-motor transport monoplanes have been shot down over the Mediterranean in recent weeks or destroyed on the ground. Others are probably in use supplying the remnants of the Afrika Korps in Tunisia and operating behind the Russian front.

The Me 323 is a very big high-wing monoplane developed from the "Gigant" glider and powered with six 710 h.p. Gnôme-Rhône 14M radial motors made in France or, alternatively, six 720 h.p. BMW 132 motors of German manufacture. The size of the fuselage, which can accommodate up to 130 troops or 26,000 lb. (11.6 tons) of load, and the comparatively low power of the engines, results in a poor



performance. The top speed is probably not more than 150 m.p.h. The Me 323 has a total power of only some 4,260 h.p. compared with the 5,400 h.p. of the Douglas Skymaster which weighs less and has about half the drag.

One of the advantages of the Me 323 is that it is relatively simple to build and thus may be considered as "expendable goods" in service. Doubtless old engines are being used up in it, salvaged from obsolete types of aircraft, both French and German.

An interesting feature is the 10-wheel undercarriage designed to distribute the load, make possible the use of small wheels and to keep the machine more or less in flying attitude on the ground. The track is so small that lateral stability must be poor on the ground and there is probably a serious risk of blowing over on a gusty day.

In general the Me 323 may be considered as an effort to transport the maximum of men and munitions by air at the smallest cost in production man-hours and without regard to risks in transit.

The following particulars are approximate:—

DIMENSIONS.—Span, 178 ft. 0 in.; length, 88 ft. 0 in.

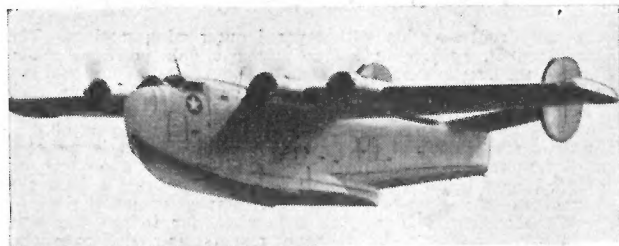
WEIGHTS.—Empty, 34,000 lb.; loaded, 65,000 lb.

PERFORMANCE.—Max. speed, 150 m.p.h.; range, about 600 miles at 110 m.p.h.

POINTS OF RECOGNITION.—Six-motor high-wing braced monoplane, swept forward trailing edge. Tall angular single fin and rudder. Deep, blunt nose.

CIVIL IDENTIFICATION—LXXXII

THE CONSOLIDATED CORONADO (TRANSPORT)



A LARGE NUMBER of Consolidated Coronado flying-boats modified for transport purposes are being supplied to the U.S. Navy and American Export Airlines and some may be seen flying in this country shortly. Tactical conditions determine whether landplane or seaplane transports can best be operated, and the United States is building a large fleet of both.

The Consolidated Coronado Transport has a "solid" nose and tail—the gun turrets and other military equipment having

been removed. Thus it approximates to the original projected Model 29 civil flying-boat, from which the PB2Y-3 Coronado was developed. This civil version was to have carried 62 passengers by day and 36 by night. Its motors were Pratt and Whitney Twin Wasps of 1,050 h.p. each. The Coronado Transport is equipped with Pratt and Whitney Twin Wasp R-1830-S1C3-G 14-cylinder radials of 1,200 h.p. each.

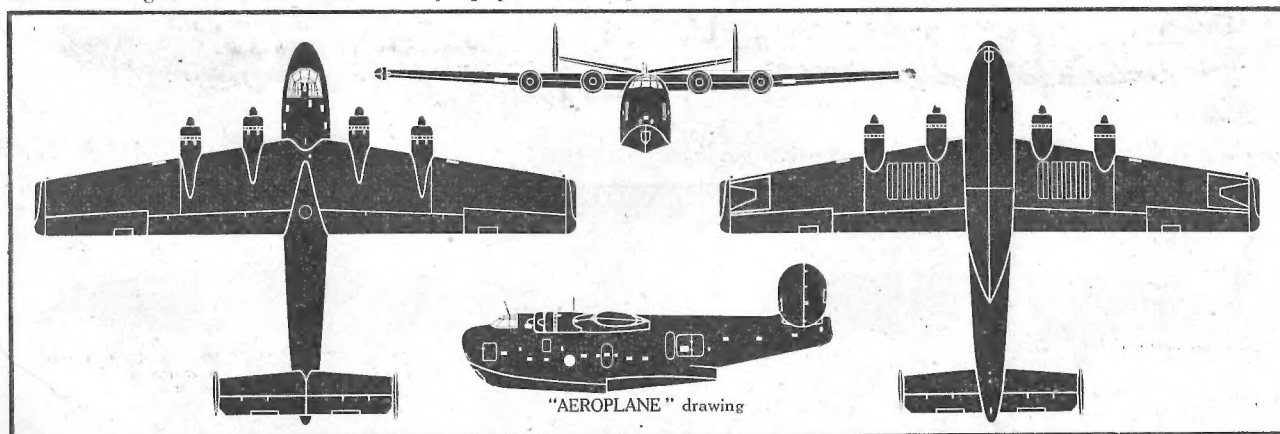
Construction is all-metal, only the trailing edges of the wings being fabric covered. The range of the military PB2Y-3 is quoted as 3,700 miles at 160 m.p.h., but the estimated range of the civil Model 29 of 1938 was 5,200 miles. The following figures are for the military PB2Y-3:—

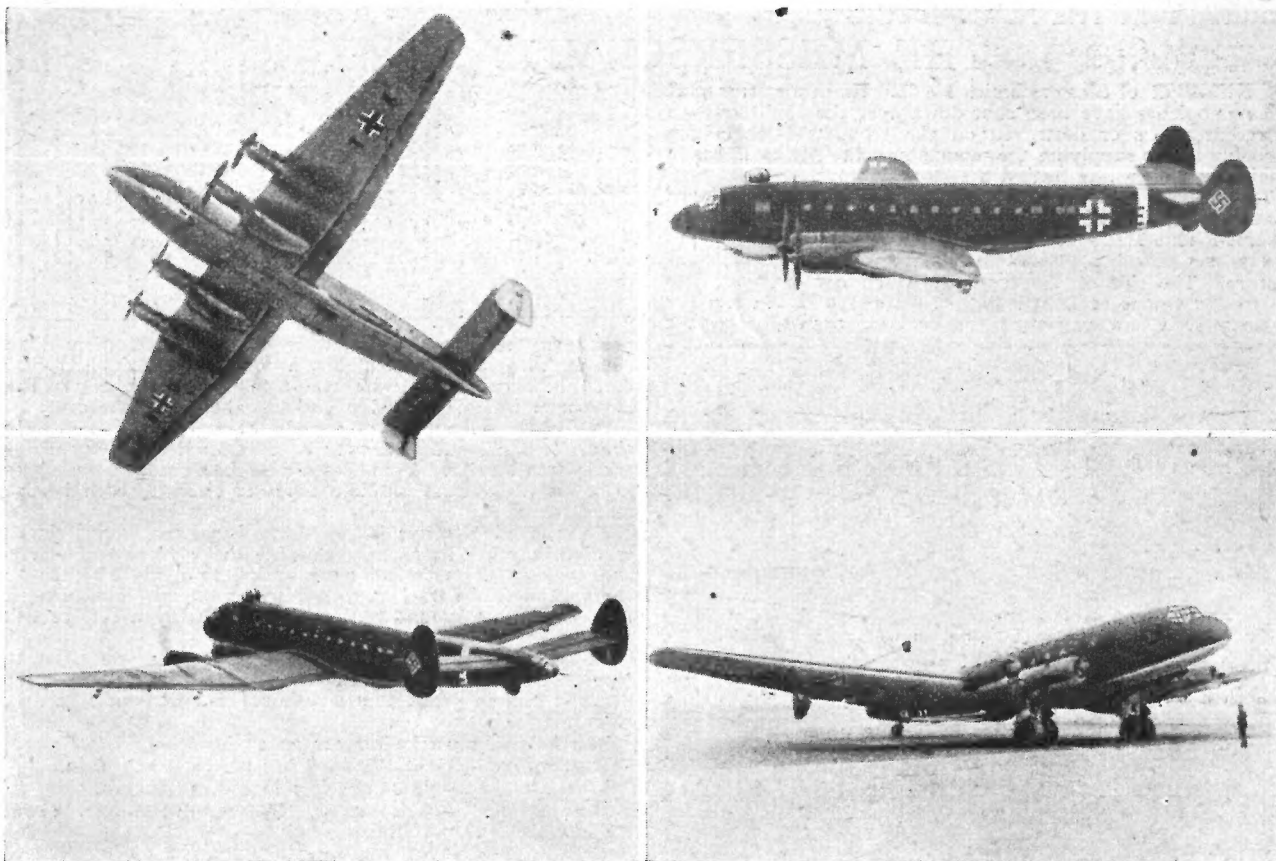
DIMENSIONS.—Span, 115 ft. 0 in.; length, 79 ft. 3 in.; height, 25 ft. 4 in.; wing area, 1,780 sq. ft.; aspect ratio, 7.43.

WEIGHTS.—Empty, 40,000 lb.; loaded, 60,000 lb.

PERFORMANCE.—Max. speed, 219 m.p.h. at 8,000 ft.; initial climb, 690 ft. per min.

POINTS OF RECOGNITION.—Four-motor high-wing monoplane with deep hull. Twin fins and rudders with dihedral on the tailplane. Floats retract to form wing-tips. Little taper on wings.





BOMBER TRANSPORTS.—Photographs of the new Junkers Ju 90s (four 1,600 h.p. BMW 801 motors). The angular fins and rudder of the top left machine indicate that it is the prototype.

LESSER KNOWN TYPES—LXIII

THE JUNKERS Ju 90s

JUNKERS Ju 90s four-motor bomber-transport developed from the older Ju 90B are in service with the Luftwaffe. Recently numbers have been used to assist in supplying the German forces in Tunisia, others are in use as transports on the Russian front, and rumours have mentioned the bomber version as participating in small scale night raids on the British Isles.

The Ju 90 prototype, the "Grosse Dessauer," first flew in June 1938, but later crashed during wing vibration tests. It was powered with four 610 h.p. Junkers Jumo 210 liquid-cooled inverted Vee motors, but the production Ju 90B had 880 h.p. BMW 132H air-cooled radial motors which gave it a maximum speed of 236 m.p.h.

A military version of the Ju 90A, the Ju 89, was built in small numbers and was used as a bomber with the Condor Legion in Spain during the civil war, and some were used as transports during the German invasion of Crete.

Although based on the Ju 90B, the new Ju 90s is largely redesigned. In particular the wings are of a new plan form and the motors are the more powerful 1,600 h.p. BMW 801s. Modifications have been made also to the fuselage and tail unit, but the form of construction and general layout has remained the same as in the earlier aeroplane.

Instead of the swept-back wings of the Ju 90B, the Ju 90s has

a rectangular centre-section with tapered outer wing sections. The fuselage is 5 ft. greater in length and has gun positions above and below the fuselage and in the tail. Rounded fins and rudders have replaced the angular vertical tail surfaces of the Ju 90B. The four 1,600 h.p. BMW 801 radial motors with fan-assisted air-cooling give the Ju 90s a maximum speed of about 260 m.p.h.

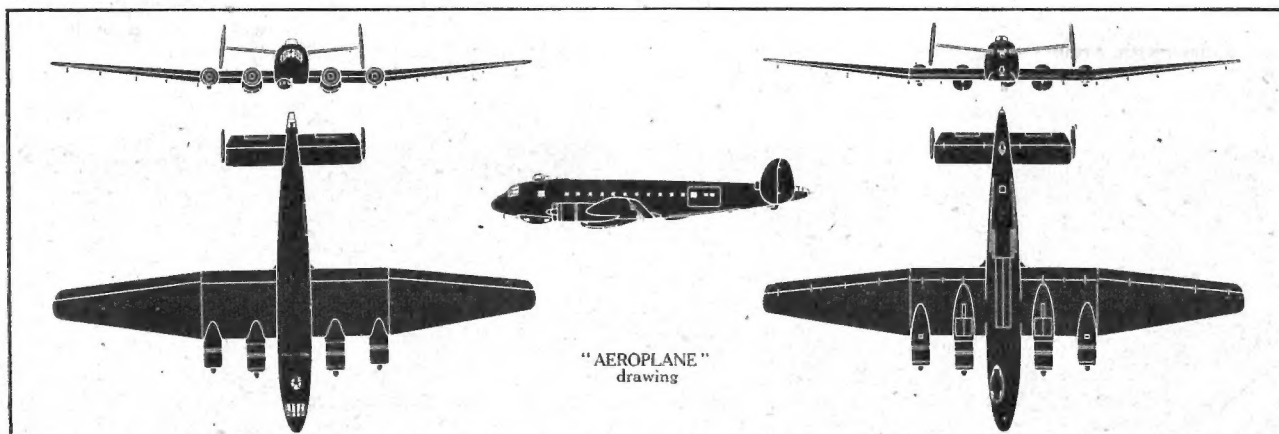
The defensive armament of cannon and machine-guns is mounted in a power-operated dorsal turret behind the pilot's cockpit, in an off-set blister below the nose, in a ventral position behind the trailing edge of the wings and in the tail. The armament is retained whether the aeroplane is used as a bomber, for freight transport or as a troop carrier. All German reports now designate this aeroplane the Ju 90s. The Ju 290 is another and different design. The following are the available particulars of the Ju 90s and the revised silhouettes:—

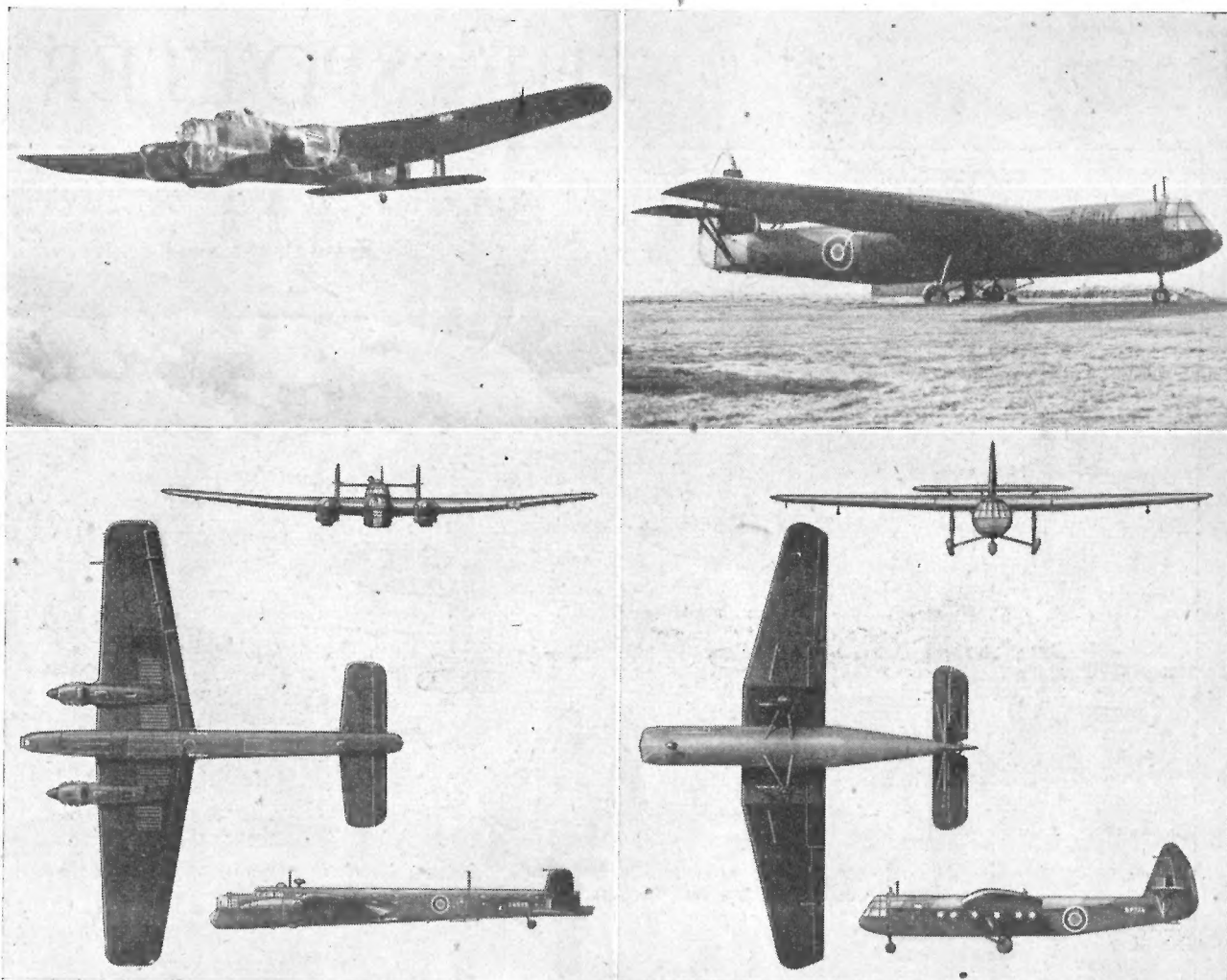
DIMENSIONS.—Span, 137 ft. 6 in.; length, 91 ft. 9 in.

WEIGHT.—Loaded, about 55,000 lb.

PERFORMANCE.—Max. speed, about 260 m.p.h. at 13,100 ft.; range, about 1,250 miles at 185 m.p.h.

POINTS OF RECOGNITION.—Four-motor low-wing monoplane with twin fins and rudders and dihedral angle on tailplane. Gun turret on top of fuselage ahead of wings and cone turret in tail.



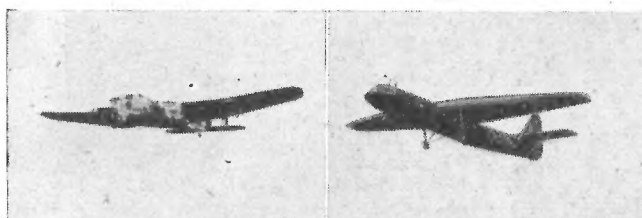


DETAILED ANALYSIS.—The points by which the subjects of the previous recognition problems can be recognised are illustrated in the photographs and drawings by W. J. Everest, of the Armstrong Whitworth Whitley V (left) and in the Airspeed Horsa (right). *[The Aeroplane] photographs and drawings*

THE Armstrong Whitworth Whitley V glider tug (two 1,145 Rolls-Royce Merlin X liquid-cooled Vee motors) and the Airspeed Horsa troop-carrying glider were the subjects of the previous recognition tests. The Whitley, with the Wellington, served as the mainstay of Bomber Command of the R.A.F. early in the War. It retired as a first-line heavy bomber in 1942. Since then its main duties have been anti-submarine sea patrols with Coastal Command and towing gliders with Army Co-operation Command. The Whitley illustrated here is used for glider towing duties, the rear turret being removed to stow the towing apparatus.

Recognition features from this angle are the mid wings with

Aircraft Recognition



269

PREVIOUS PROBLEMS.—(Left) A Whitley and (right) a Horsa.

270

little taper, square-cut tips and dihedral outboard of the motors, slab-sided nose with raised cockpit and the low tailplane with fin and rudder set mid-way. The characteristic "nose-down" attitude is not noticeable from this view.

The Airspeed Horsa glider can carry a heavy load and is in service with the British Army. Ungainly in appearance, it pairs well with its tug, the Whitley.

From this angle recognition points are the high-wing with tapered leading edge, straight trailing edge, rectangular centre section, and square tips, long circular-section fuselage, untapered except near the tail, blunt nose, tall pointed fin and rudder, high strutted tailplane and fixed strutted tricycle undercarriage.



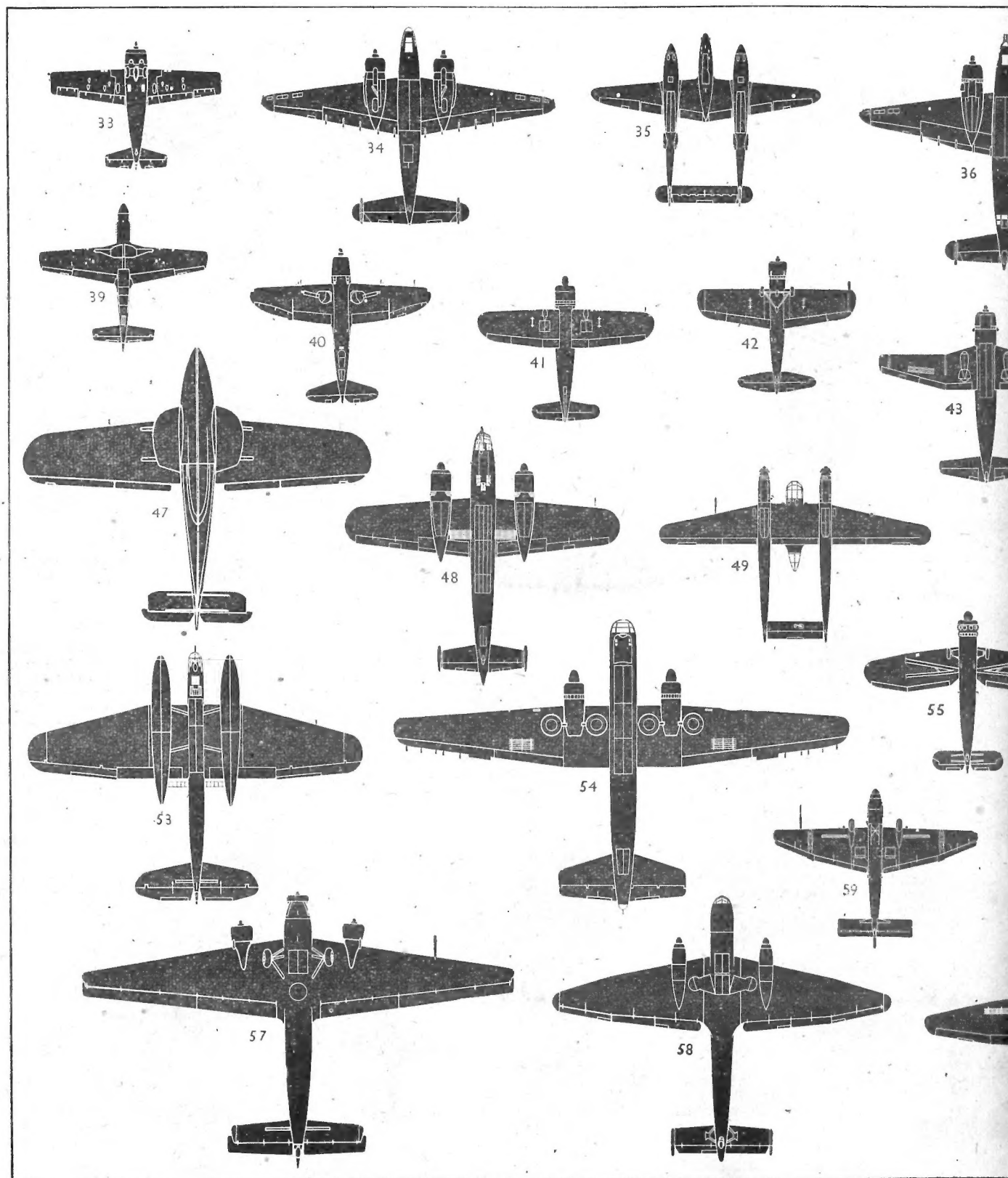
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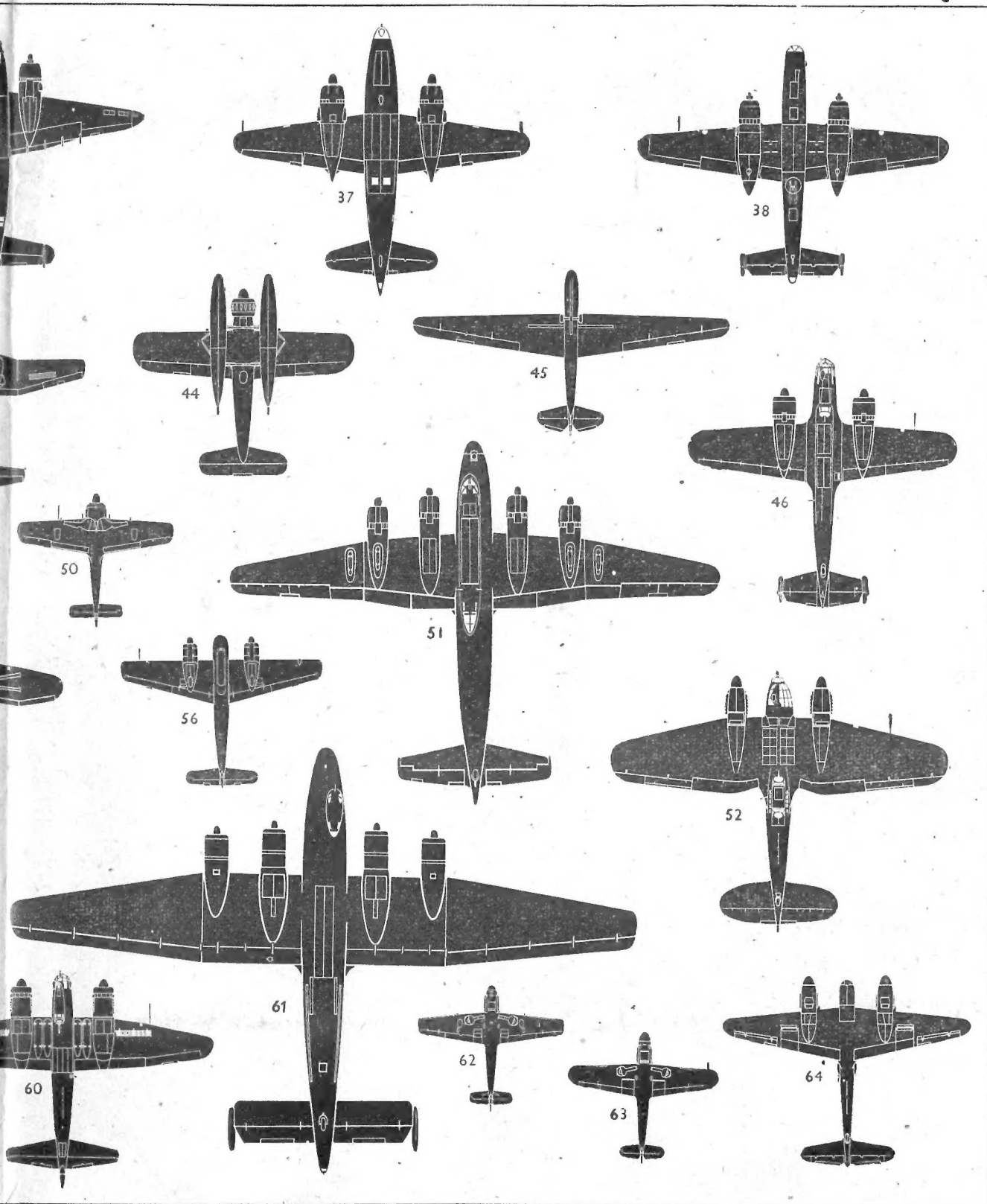
FOR IDENTIFICATION LXXXII.—Two more photographs to give practice in the recognition of Allied and enemy aeroplanes. What they are and notes on their characteristics will be published with two more photographs on May 6.

THE SPOTTER'S

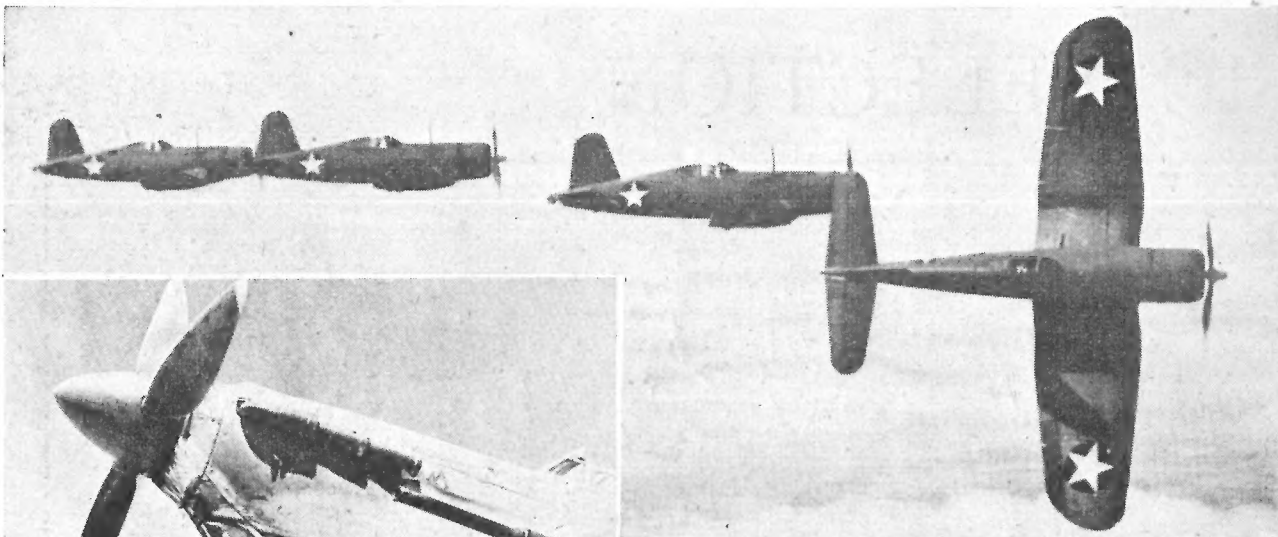


THE SECOND HALF OF THE PLAN VIEWS.—Set out above, in true relative scale (smaller than the side and head-on views), are the reverse views of the aircraft shown on the previous page. The aircraft are:—(33) Grumman Martlet IV; (34) Lockheed Hudson; (35) Lockheed Ventura; (36) Lockheed Ventura; (39) North American Mustang I; (40) Republic Thunderbolt I; (41) Vought-Sikorsky Corsair I; (42) Vought-Sikorsky Kingfisher; (43) Vought-Sikorsky Kingfisher; (47) Dornier Do 217E2; (48) Dornier Do 217E2; (49) Focke-Wulf Fw 189; (50) Focke-Wulf Fw 190A3; (51) Focke-Wulf Fw 200K2, (Kurier); (52) Heinkel He 111; (53) Heinkel He 111; (54) Junkers Ju 86P; (55) Junkers Ju 86P; (57) Junkers Ju 87D; (58) Junkers Ju 88A6; (59) Junkers Ju 88A6; (61) Junkers Ju 90s; (62) Junkers Ju 90s.

BASIC SELECTION



Revised plan view silhouettes of eleven American and twenty-one German first-line aeroplanes, advanced trainers and gliders in the revised version III; (35) Lockheed Lightning I; (36) Lockheed-Vega Ventura I; (37) Martin Marauder I; (38) North American Mitchell I; (39) North American P-51 Mustang I; (40) North American P-52 Mustang II; (41) North American P-53 Mustang III; (42) North American P-54 Mustang IV; (43) Vultee Vengeance I; (44) Arado Ar 196A; (45) DFS 230A1; (46) Dornier Do 17Z2; (47) Dornier Do 18K2; (48) Dornier Do 24; (49) Heinkel He 111H3; (50) Heinkel He 111H3; (51) Heinkel He 111H3; (52) Heinkel He 111H3; (53) Heinkel He 115K2; (54) Heinkel He 177; (55) Henschel Hs 126; (56) Henschel Hs 129; (57) Junkers Ju 52/3mF; (58) Junkers Ju 87; (59) Junkers Ju 88; (60) Messerschmitt Me 109E; (61) Messerschmitt Me 109F; (62) Messerschmitt Me 109F; (63) Messerschmitt Me 109F; (64) Messerschmitt Me 210A1.

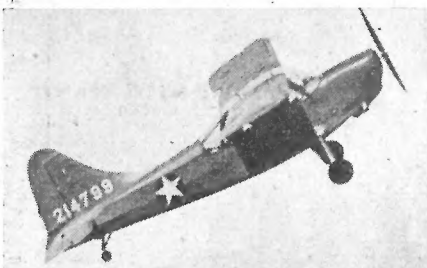


SKY CORSAIRS.—Latest single-seat fighters of the U.S. Navy, these Vought-Sikorsky F4D-1 Corsairs, have been in action recently against the Japanese over the Solomon Islands. Powered with a 2,000 h.p. Pratt and Whitney Double-Wasp motor, the latest version, shown here, has a longer nose and cockpit set farther back than the prototype which was quoted as having a top speed of 366 m.p.h.

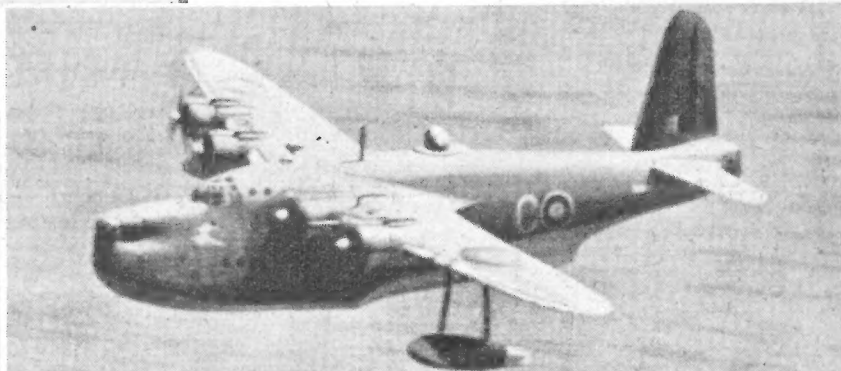
NEWS IN PHOTOGRAPHS



HITTING POWER.—A close-up of the 40 mm. cannon slung under one of the wings of the Hawker Hurricane IIb tank buster.



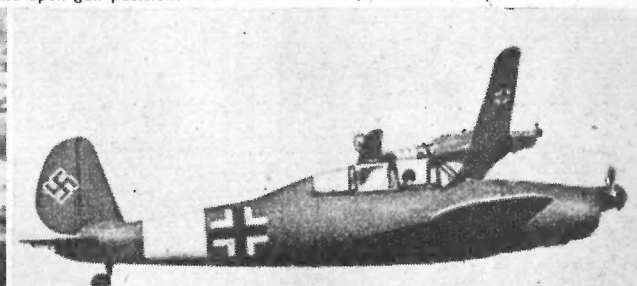
ARMY LIAISON.—A Vultee Stinson L-5 Sentinel in its latest form with a 190 h.p. Lycoming motor.



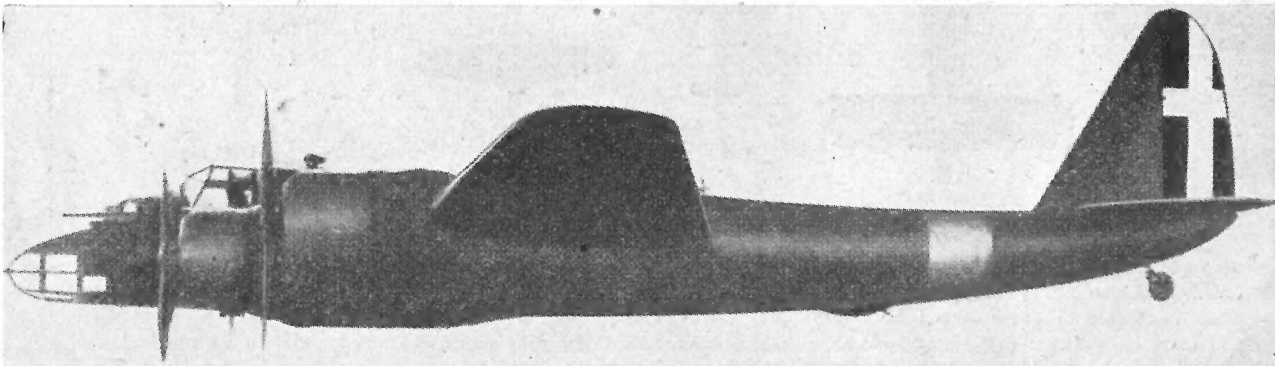
SUNDERLAND RE-ARMED.—A photograph of the Short Sunderland II four-motor flying-boat which differs from the earlier model in the two-gun dorsal turret in place of the open gun position. The Sunderland III has no front step.



FIGHTER - BOMBER.—A North American A-36 fighter-bomber, a modification of the Mustang. This aeroplane is fitted with dive brakes and bomb racks.



LUFTWAFFE TRAINERS.—Arado Ar 96B single-motor advanced trainers of the German Air Force. They correspond approximately to our Miles Master.



AN ITALIAN HEAVY.—A Piaggio P.108 four-motor bomber of the Regia Aeronautica. One bomber Group is equipped with these machines.

THE NATIONAL ASSOCIATION OF SPOTTERS' CLUBS

GENERAL COUNCIL:

Hon. General Sec. (North):
Miss M. Duncan, 10, Eden Street, Riddrie, Glasgow.

Hon. General Sec. (South):
P. T. Sampson, 56, Forest Drive West, E.I.I.

Hon. Secs. of REGIONAL COUNCILS:

NORTHERN—T. Carver (pro tem.), Royal Grammar School, Eskdale Terrace, Newcastle-on-Tyne. NORTH-EASTERN—W. M. Sowerby, 9, Grange Park Place, Leeds. NORTH-MIDLANDS—R. R. Langley, 80, Cornwall Road, Kettering, Northants. EASTERN—J. E. Barnes, 140, Moulsham Drive, Chelmsford. LONDON—F. C. Palethorpe, 38, Bridgewater Road, Alperton, Middx. SOUTHERN—A. Marple, 16, Bridge Street, Reading. SOUTH-WESTERN—E. Griffiths, 25, Charlton Avenue, Filton, Bristol, I. WELSH—W. H. Young, 21, Beaufort Place, St. Julians Park, Newport, Mon. MIDLAND—G. C. Matthews, 239, The Broadway, Dudley, Worcs. NORTH-WESTERN—H. Pearson, 12, Plymouth Street, Oldham. SCOTTISH—Miss M. Duncan, 10, Eden Street, Glasgow. SOUTH-EASTERN—P. Chinery, "Little Hemingfold," Battle, Sussex.

NEW SPOTTERS' CLUBS

WE HAVE RECEIVED notice of the formation of the following new Spotters' Clubs:—
No. 578.—**Dauntsey's School S.C.**—(Hon. Sec.: D. H. Hughes, Dauntsey's School, West Lavington, Nr. Devizes, Wilts.) *South Western Region (No. 7).*
No. 579.—**Aircraft Recognition and Modelling Group, Walsall Wing, A.T.C.**—(Hon. Sec.: W. B. Richardson, 201, Sutton Road, Walsall.) *Midland Region (No. 2).*
No. 580.—**Emanuel School S.C.**—(Hon. Sec.: D. L. Haydock, The Parsonage, Sheet, Hants.) *Southern Region (No. 6).*
No. 581.—**Southern College of Art Students S.C.**—(Hon. Sec.: P. M. E. Tillet, 81, North Walls, Winchester, Hants.) *Southern Region (No. 6).*
No. 582.—**"Victoria" S.C.**—(Hon. Sec.: S. Boreham, 22, Eaton Avenue, High Wycombe.) *Southern Region (No. 6).*
No. 583.—**Pembont, 1082 Sqdn. A.T.C.**—(Hon. Sec.: Capt. Sgt. W. J. Ainger, 20, Cemetery Road, Bridgend, Glam.) *Welsh Region (No. 8).*
No. 584.—**"Lenham and District" S.C.**—(Hon. Sec.: J. Holks, "Station House," Lenham, Kent.) *South Eastern Region (No. 12).*
No. 585.—**Abingdon A.T.C. S.C.**—(Hon. Sec.: Cadet F. R. Beach, c/o Boxhill School, Abingdon, Berks.) *Southern Region (No. 6).*
No. 586.—**English Electric (Rugby) S.C.**—(Hon. Sec.: N. L. Beetham, c/o H.D.S. English Electric Co., Ltd., Rugby.) *Midland Region (No. 9).*
No. 587.—**Royal Commercial Travellers Schools S.C.**—(Hon. Sec.: G. Rowe, R.C.T. Schools, Hatch End, Middx.) *London Region (No. 5).*
No. 588.—**National Physical Laboratory R.S.C.**—(Hon. Sec.: R. W. F. Gould, National Physical Laboratory, Teddington.) *London Region (No. 5).*
No. 589.—**Luton Police R.S.C.**—(Hon. Sec.: C. White, P.C.77, Luton Borough Police.) *Eastern Region (No. 11).*
No. 590.—**Bury J.T.C. S.C.**—(Hon. Sec.: L. Cpl. Taylor, 135, Withins Lane, Breightmet, Bolton.) *North West Region (No. 10).*
No. 591.—**Manchester North East.**—(Hon. Sec.: H. Norris, 34 Crayford Road, Newton Heath, Manchester, 10.) *North West Region (No. 10).*

CHANGES IN CLUB SECRETARIES

THE FOLLOWING are the names and addresses of new Hon. Secs. of Clubs. They replace those previously published:—
No. 20.—**Inpswich S.C.**—(Hon. Sec.: A. Southgate, Argyle Street Schools, Ipswich.)
No. 25.—**Radley.**—(Hon. Sec.: J. H. A. Speir, Broom Warren, Iwer Heath, Bucks.)
No. 185.—**Kingston and District.**—(Hon. Sec.: R. E. Young, 75, Raeburn Avenue, Tolworth, Surbiton, Surrey.)
No. 191.—**MHI Hill S.C.**—(Hon. Sec.: P. J. Barry, Tomlin House, St. Bees, W. Cumberland.)
No. 316.—**Canford School S.C.**—(Hon. Sec.: B. H. Jefferson, Little Barn, Wych Hill Way, Woking.)
No. 360.—**Angmering S.C.**—(Hon. Sec.: P. D. Wadett, "Wem," Arundel Road, Angmering, W. Sussex.)
No. 406.—**Cambuslang A.T.C. S.C.**—(Hon. Sec.: Pte. Sgt. A. Paterson, 29, Gilbertfield Road, Halfway, Cambuslang.)

FOURTEENTH EXECUTIVE COMMITTEE MEETING

FOUR MEMBERS of the Executive Committee of the General Council were present at the fourteenth meeting of the committee held in London on Tuesday, April 15, at 18.00 hrs. Miss Hodson and Mr. M. R. T. Edwards, Hon. Treasurer of the N.A.S.C., were also present. Mr. S. F. Sabin was in the chair.

Minutes of the previous meeting were accepted and members of the committee reported on the action they had taken as a result of that meeting. Mr. Sampson told the committee of developments in relations between the ex-librarian of the N.A.S.C. and the Association. The Chairman commented on the circulation of THE AEROPLANE SPOTTER.

Mr. Palethorpe regretted that he could not accept his nomination as the N.A.S.C. delegate to a meeting of Regional Raid Spotting Officers and the nomination and appointment of a delegate was left to Mr. Edwards.

Matters concerning the Southern Regional Council were discussed at some length and the Committee nominated representatives to attend the meeting of the Southern Regional Council held on April 17.

Cognisance was taken of the formation of an independent "Aircraft Recognition Society" in the London area.

At the end of the meeting members of the committee discussed a lengthy report from the Competitions Sub-committee on a proposed scheme for the organization of nation wide inter-club and inter-region aircraft recognition contests.

The next meeting was arranged to take place on April 27 in London at 18.00 hrs.

CLUB ANNUAL GENERAL MEETINGS

CLUBS ARE REMINDED that their Annual General Meetings must take place during the month of May. Rule No. 15 of the Constitution of the N.A.S.C. lays down a number of items which must be included in agendas of Club A.G.M.s.

Just before or immediately after these meetings clubs are asked to send a brief report on their activities during the past year to Mr. P. F. Murray, c/o THE AEROPLANE SPOTTER, so that ideas for club meetings and activities can be circulated throughout the Association in these columns.

All matters which club members wish to be included in the agendas of Regional Annual General Meetings to be held in June or in the agenda of the Annual General Meeting of the N.A.S.C. to be held on July 24, must be brought up at Club A.G.M.s. and then forwarded, after approval, to either Regional Hon. Secretaries or, in the case of the A.G.M. of the Association, to Mr. P. T. Sampson, Hon. Secretary of the General Council.

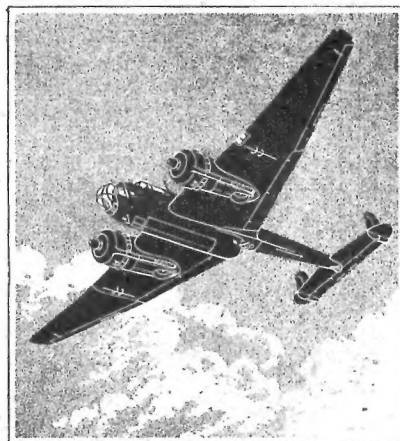
RULES AND REGULATIONS

Third Class Test

THE FOLLOWING RULES should be observed by Club Competitions Officers when conducting Third Class Proficiency Tests:

1. **Cards.**—Thirty-one cards (11 head-on, 10 plain, and 10 side) must be selected from the 192 cards (three views of 64 aircraft) in the test.
2. **Time.**—Each silhouette must not be seen by the candidate for more than five seconds. Ten seconds must elapse before the next silhouette is shown.

PHOTOGRAPHIC SILHOUETTES—XXVII



A Handley Page Hampden I.

3. **Illumination.**—When projected the illumination should be sufficient to distinguish between radial and in-line motors, as shown by the structural lines in side view silhouettes.

4. **Marking.**—One mark should be awarded for every aircraft correctly recognized, and those gaining 25 marks or more (i.e., 80 per cent. or more of a possible total of 31 marks) will have qualified for the Third Class Certificate of the National Association of Spotters' Clubs.

No half marks must be awarded and identifications must agree precisely with the index. Enough information must be given by the candidate to identify each aircraft from all others in the test.

N.A.S.C. PUBLICATIONS

SUPPLIES of Membership Cards, Helmet Transfers, and Lapel Badges, have now been exhausted. Membership Cards should be available again before long. In the meantime blue prints for a Hunt Trainer can still be obtained through Regional Hon. Secretaries, price 2s. 6d. each, and copies of the Raid Spotters' Notebook can still be obtained by Club Hon. Secretaries from Mr. C. F. Andrews, "Orchard Lea," Lower Knaphill, Woking, Surrey, price 2s. 3d. each (postage included). All letters to Mr. Andrews should be marked "N.A.S.C. Library."

HUDDERSFIELD MODEL CONTEST

THE HUDDERSFIELD AND DISTRICT Spotters' Club is organising an Exhibition of Model Aircraft in connection with the Huddersfield "Wings for Victory" week. Flying and Solid Scale models of all classes can be entered and twelve prizes of savings certificates will be awarded. Full particulars and entry forms can be obtained from J. S. Brook, Hon. Secretary of the Huddersfield and District Spotters' Club, 7, Lynndale Avenue, Birkby, Huddersfield.

SPOTTERS IN BISHOPS WALTHAM, HANTS

MR. LIVINGSTONE-LEARNMOUTH is hoping to form a Spotters' Club in the Bishops Waltham area, and all interested are invited to write to him at Hill House, Bishops Waltham, Hants.

SPOTTERS' CLUB IN TOTNES

THE INAUGURAL MEETING of the Spotters' Club to be formed in Totnes, Devon, will be held on April 30 at 59a, High Street, Totnes. Temp. Act. Sec. is Mr. A. D. de Lacey, c/o Troulans, Ltd., 35, Fore Street, Totnes.

EXHIBITION IN BOURNEMOUTH

AN AIRCRAFT EXHIBITION is being organised by S.C. No. 419 (Bournemouth School A.R.C.) in connection with Bournemouth's "Wings for Victory" Week, and will be held in Bournemouth School Hall, East Way, Charminster, on May 8, commencing at 15.00 hrs.

FORTHCOMING EVENTS

April 22
Seaham.—Rock House.—18.30 hrs.—(S.C. 250.)
Battersea Men's Institute, Latchmere Road, S.W.11.—19.45 hrs.—(S.C. 483.)

Beaconsfield.—Council Hall.—19.30 hrs.—(S.C. 556.)
Westminster.—Thornycroft House.—18.00 hrs.—(S.C. 142.)
Harrow.—Kodak Social Centre.—19.30 hrs.—(S.C. 75.)

April 23
North Birmingham.—11, Poppy Lane.—19.15 hrs.—(S.C. 15.)
Croydon.—Fairfield Training Centre, the Car Park, Park Lane.—18.45 hrs.—(S.C. 404.)

April 26
Hendon Technical College.—19.30 hrs.—(S.C. 124.)
Downham.—Burnt Ash School.—19.30 hrs.—(S.C. 454.)

April 27
Southend.—A.R.P. H.O., 120, Victoria Avenue.—19.00 hrs.—(S.C. 1.)
Guildford.—County Technical College, Stoke Park.—19.30 hrs.—(S.C. 150.)

N. London.—Northern Polytechnic, Holloway Road, N.7.—19.00 hrs.—(S.C. 156.)

Crosby.—St. Mary's College.—19.00 hrs.—(S.C. 520.)
London.—Meeting of Executive Committee of General Council.—Bowling Green Lane, E.C.1.—18.00 hrs.

April 28
Hastings.—White Rock Pavilion.—19.50 hrs.—(S.C. 47.)
Rickmansworth.—112, High Street.—19.30 hrs.—(S.C. 81.)
Dagenham.—Ford's Sports Pavilion.—19 hrs.—(S.C. 99.)

Wigan.—Town Hall.—19.15 hrs.—(S.C. 266.)
Walton-on-Thames.—Anglo-Iranian Oil Co., Ltd., New Zealand Avenue.—(S.C. 96.)

Sheffield.—Geo. Senior and Sons, Ltd., Ponds Forge, Sheaf Street.—19.00 hrs.—(S.C. 178.)
Newbury.—Elliott's West Street.—19.30 hrs.—(S.C. 51.)

April 29
Cambridge.—Chivers and Sons Ltd.—19.30 hrs.—(S.C. 145.)
Seaham.—Rock House.—18.30 hrs.—(S.C. 250.)
Crosby.—St. Mary's College.—19.00 hrs.—(S.C. 520.)
Battersea Men's Institute, Latchmere Road, S.W.11.—19.45 hrs.—(S.C. 483.)

Doncaster.—21 French Gate.—19.00 hrs.—(S.C. 106.)
Harrow.—Kodak Social Centre.—19.30 hrs.—(S.C. 75.)

April 30
Sunderland.—Town Hall.—19.30 hrs.—(S.C. 37.)
Hoddesdon.—Cleck House.—19.30 hrs.—(S.C. 128.)
Stapleford.—Constitutional Club.—19.00 hrs.—(S.C. 159.)
Croydon.—Fairfield Training Centre, the Car Park, Park Lane.—18.45 hrs.—(S.C. 404.)

May 3
Appleyby.—Grammar School.—14.00 hrs.—(S.C. 411.)

May 4
Streatham Common.—St. Joseph's College, Crown Point.—(S.C. 13.)
Guildford.—County Technical College, Stoke Park.—19.30 hrs.—(S.C. 150.)
N. London.—Northern Polytechnic, Holloway Road, N.7.—(S.C. 150.)

May 5
Blackfriars.—Cinema, Unilever House.—18.00 hrs.—(S.C. 12.)
Streatham Common.—St. Joseph's College, Crown Point.—(S.C. 13.)
Belfast.—45, Howard Street.—(S.C. 151.)

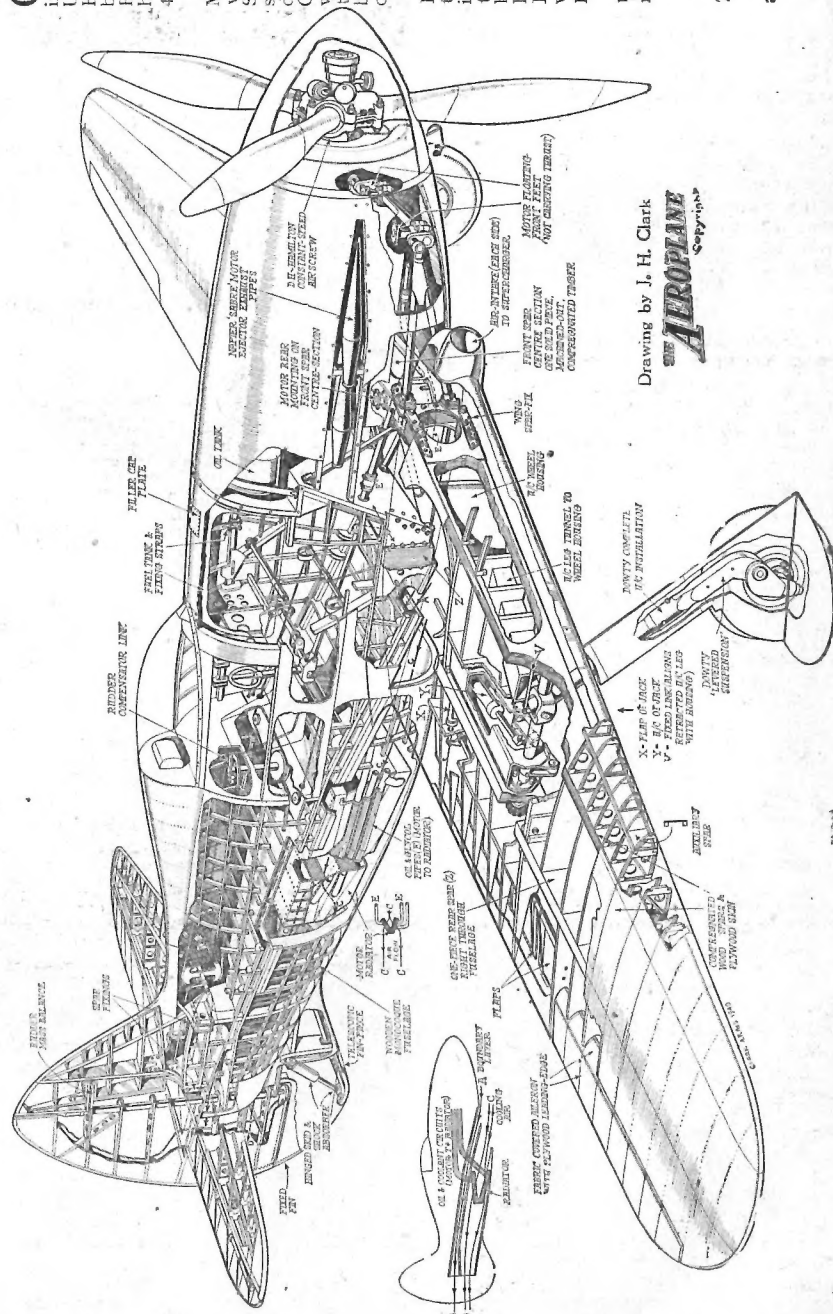
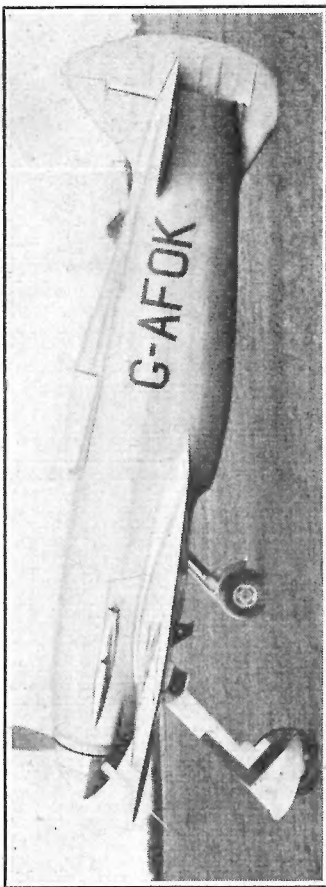
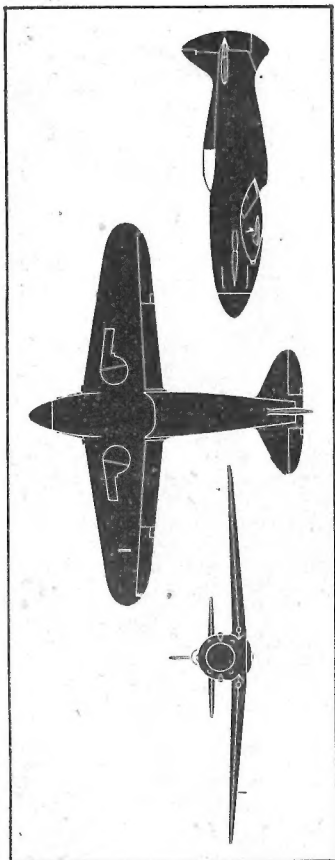
Sheffield.—Victoria Hall.—19.00 hrs.—(S.C. 178.)
Wigan.—Town Hall.—19.15 hrs.—(S.C. 266.)
Newcastle.—(Tyneside) The Crow's Nest Hotel.—Annual General Meeting.—19.00 hrs.—(S.C. 272.)

May 6
Dudley.—Hen and Chickens Inn.—19.30 hrs.—(S.C. 115.)
Harrow.—Kodak Social Centre.—19.30 hrs.—(S.C. 75.)
Westminster.—Thornycroft House.—18.00 hrs.—(S.C. 142.)

May 7
Birmingham.—Annual General Meeting of Midland Regional Council.—Civic House, Gt. Charles St.—14.30 hrs.

AEROPLANES IN DETAIL—XLVII

THE HESTON-NAPIER RACER (one Napier Sabre motor)



Drawing by J. H. Clark
AEROPLANE
COPYRIGHT

ONE OF THE MOST INTERESTING high-speed aeroplanes of recent years was the Heston-Napier Racer built in 1939 to recover the World's Speed Record for Great Britain. Unfortunately the Racer, which bore the Works' Number Heston V, was crashed on its first test flight in 1940, and because of the War the second prototype was not completed. Had development gone forward the machine would probably have attained or surpassed its estimated maximum speed of 480 m.p.h.

The design of the Heston-Napier Racer was laid out by Mr. A. E. Hagg, at that time with D. Napier and Sons, who inspired the project, and was built around the Napier Sabre 24-cylinder motor re-rated to give maximum power at sea level. The Heston design staff under Mr. G. Cornwall did the detail design and Lord Nuffield provided the finance. Construction was entirely of wood. An interesting feature was that the radiator was located behind the pilot in such the same position adopted for the Mustang. Drag was reduced by a by-pass for the turbulent boundary layer over the top of the radiator—a system later used on the Me 109.

On the first test flight on June 12, 1940, Sqdn. Ldr. G. L. G. Richmond, Chief Test Pilot of the Heston Company, found the engine coolant boiling and made a good approach to land in difficult conditions. Unfortunately he had the misfortune to stall in the last stages of the approach and the aeroplane's back was broken. The Heston-Napier Racer will go down to history as an extremely interesting but unlucky design. Doubtless by the end of the War its estimated performance will be surpassed by standard single-seat fighters. Such is progress.

DIMENSIONS.—Span, 32 ft. 0½ in.; length, 24 ft. 7½ in.; height, 11 ft. 10 in.; wing area (gross), 107.6 sq. ft.; aspect ratio, 6.1.

WEIGHT.—Loaded, 7,200 lb.

LOADINGS.—Wing (on gross area), 42 lb. per sq. ft.; span, 7.02 lb. per sq. ft.

PERFORMANCE.—(Estimated) Maximum speed, 480 m.p.h. at sea level; duration, 18 mins. (at full power).

CORRESPONDENCE

LOOPING

I SAW in a daily paper that, because of the burst of a near-by shell, a Lancaster was forced to loop the loop. Immediately afterwards an examination was made of the machine and it was found to have suffered no structural strain. In my district I frequently see a Mosquito and a Lightning doing a vertical bank but never looping the loop. Is it possible for multi-engined aircraft to do this? F. C. MORRIS.

[Yes. Both the Mosquito and Beaufighter have been and can be looped with ease. The loop has little tactical value and so is not usually practised as a fighting manoeuvre. There is no reason why a Lancaster should not loop—after all, the early Blériots were looped frequently before the Great War of 1914-18, and they were far less robust structures. They even did tail slides.—ED.]

TERMINAL VELOCITY

DID Lieutenants Dyer and Comstock, of the U.S. Army Air Force at Farmingdale, Long Island, U.S.A., dive the P-47 Thunderbolt at 725 m.p.h.?

Also did the late Wing Commander Stainforth dive a Spitfire at more than 743 m.p.h.? H.V.G.

[The American figure of 725 m.p.h. for a terminal velocity dive of the Thunderbolt is presumably correct. George Stainforth accidentally attained about 620 m.p.h. in a Spitfire in 1939 when his oxygen supply failed. We believe the Typhoon has been dived at more than 700 m.p.h.—on purpose.—ED.]

JAPANESE PERFORMANCE

THE MAXIM of my R-K master at school was "Read, mark, learn and inwardly digest." When I received my copy of "Aircraft Identification" Part V, I acted on the "Old Boy's" advice and wallowed up to my neck in performance figures, etc., of British, German, Italian, United States and, as far as possible on the available information, Russian aeroplanes, to see how they compared with their Japanese counterparts. My conclusions are that in armament the Japs do not lag behind any other Power, and in speed, range and service ceiling they range from fairly good to excellent. There is one point, however, which beats me. How do the Japs get such high maximum speeds from comparatively low-powered engines? Take, for instance, the Mitsubishi OB-01; this machine has roughly the same loaded weight as our own Wellington Ia and Whitley IV. The Mitsubishi Kinsei engines of 1,050 h.p. fitted on the Jap machines are approximately the same power as those fitted to the British machines which I have mentioned, yet the OB-01 is about 30 m.p.h. faster than either.

Do you think that there is a possibility of there being a more powerful aero-engine than the Kinsei in existence in Japan? American sources have mentioned a power plant which, if I remember rightly, is supposed to develop 1,565 h.p. I can hardly imagine the Americans exaggerating the qualities of foreign products, for that is what it would mean, if they were referring to the Kinsei.

E.T.F.

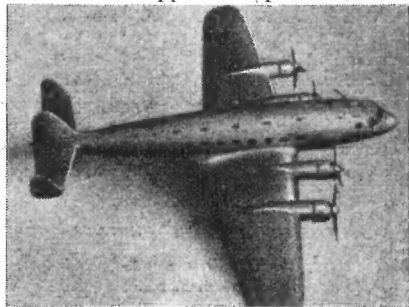
[We have no evidence of engines of more than about 1,200 h.p. in Japanese machines. What is more likely is that performance figures are exaggerated, although the OB-01 is of better aerodynamic shape than the Wellington, although not so well defended.—ED.]

OUT OF THE PAST

CAN YOU give me any gen on the Fairey C.1 (four-motor transport) and the Handley Page H.P. 47?

R. J. M. BARON, Hon. Sec., S.C. 427.

[The Fairey F.C.-1 four-motor transport monoplane, designed to specification 15/38 for trans-Atlantic operation, was under construction when the War broke out. Like the Short S.32, designed to specification 14/38, the F.C.-1 was scrapped in September, 1939.



PROJECT II.—A model of the F.C.-1.

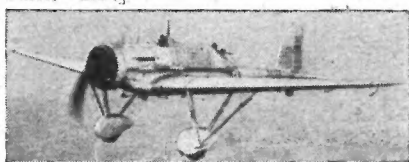
Powered with four 1,065 h.p. Bristol Taurus motors, the top speed of the F.C.1 was estimated at 275 m.p.h. at 10,000 ft., and the range 1,500 miles at 220 m.p.h., with 30 passengers in the pressure cabin. Both the F.C.-1 and the Short S.32 would be outmoded now by the development which has taken place since 1938.

Contrary to a somewhat prevalent impression the Stirling was not developed from the 14/38 but was an entirely separate design.



PROJECT I.—A model of the S.32, construction of which, with the F.C.-1, was scrapped when war broke out.

The Handley Page H.P. 47 was a general-purpose land-based torpedo-bomber built to Air Ministry specification G.4/31 which was won by the Vickers Wellesley Private Venture design. The H.P. 47 had a fixed tripod undercarriage and a very slim single tail-boom, reminiscent of the Breguet "Tout Acier" and the later H.P. Hampden. Only one prototype of the H.P. 47 was built.—ED.]



GENERAL PURPOSE.—The H.P. 47.

WELLINGTONS AND MANCHESTERS

WOULD you please tell me whether there are many Wellingtons still flying and if Manchesters are still being used on operations by Bomber Command? TONY BLACK.

[One or two Wellington IAs are still flying on non-operational work. Most Avro Manchesters are now used only for operational training.—ED.]

AIRCRAFT IN THE SPANISH CIVIL WAR

THANK you for your interesting list of aircraft in the Spanish Civil War

about which information is scarce. The books "Fighter in Spain," by Frank Tinker, and Oloff De Wett's "Card-board Crucifix" suggest the following corrections and additions.

Four Bloch 211s were stolen from a French aerodrome by the Republics while waiting delivery to Franco.

Among the Russian types used were the S.B.1, called the Katiushka; the I-16, called the Mosca, and Rasante biplane bombers about which there seem few details.

These books also state that other aircraft used were Vickers Vildebeest, Breguet 19, Nieuport 52 and Loire 46.

Incidentally, surely the P-26 was a Boeing and not a Curtiss?

Can you give me any details of the Bell BG-1 and the Swiss C-35?

KENNETH J. BARBER, A.T.C.

[“Katucha” and “Katiushka” were German and Spanish variations of the same basic name. The Mosca was the Spanish name for the aeroplane now known as the Rata. The P-26 was in fact a Boeing although the Spanish Republicans labelled it, wrongly, a Curtiss. The Bell BG-1 is dealt with in the “Spotters’ A.B.C.” this week. The AFDCT C-35, built by the Swiss Federal Factory, is a two-seat biplane fighter with an 860 h.p. Hispano-Suiza 12 VCRS “moteur-cannon.” Its top speed is 211 m.p.h. The following is a further list of aircraft used in the Spanish Civil War:—

Curtiss Hawk III.
Farman F. 470.
Focke-Wulf Fw 58.
Hanriot H.180.
Koolhoven F.K.50a.
Lockheed 10.

Meridionali Ro 37
Meridionali Ro 37 bis.
Meridionali Ro 45
Nieuport-Delage 160cl.
Savoia-Marchetti S.M.55.
Vultee V-11GB.

—ED.]

THE S.M. 79B

ON PAGE 70 of THE AEROPLANE SPOTTER of March 25, you refer to the Savoia Marchetti S.M. 79B as a two-motor passenger air-liner. According to "Aircraft of the Fighting Powers" Vol. I, this machine is classified as heavy bomber. As stated, it is shown there as a development of the Sparviero, but with improved bomb-aiming facilities.

Will you kindly confirm that it is also in service in Italy as an air-liner?

G. ROBERTSON.

[The S.M. 79B was designed originally as a two-motor civil transport with two 1,000 h.p. Piaggio radial motors in place of the three 760 h.p. Alfa-Romeo RC.134 radials. Later it was put into small-scale production for the Iraqi Air Force. All were shot down or destroyed on the ground during the revolt of the Iraqi Air Force, which began on May 2, 1941.—ED.]

BIRDS OF A FEATHER

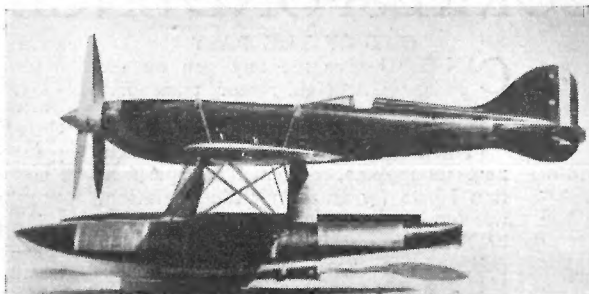
YOU state on the Correspondence Page of your last issue that the Westland-Hill Pterodactyl V was powered by a Rolls-Royce Condor motor. Perish the thought! The motor which drove the only Pterodactyl V built was a 660 h.p. Goshawk steam-cooled motor as you with your comprehensive records, will be able to confirm. The Condor was in use throughout the 1920s, but the Pterodactyl V was not built until 1934.

D. S. SMITH.

[Inability to decipher the editorial scrawl from a Pterodactyl-bed (now happily abandoned) accounted for the substitution for the Condor in type for the Goshawk in fact. Mr. Smith is correct. The Condors were last installed in the Blackburn Iris III of 1931.—ED.]

ON OCT. 23, 1934, Sec. Lt. Francesco Agello, of the Regia Aeronautica, beat his own World's Absolute Speed Record, made in April, 1933, by more than 15 miles an hour. His average speed was 440.67 m.p.h., and the new record stood for nearly five years until a Heinkel He 112u raised it to 463.943 m.p.h., later to be beaten again by the Me 109R. The record-breaking Italian aeroplane was the third of three Macchi-Castoldi floatplanes built for, but not used in, the 1931, and last, Schneider Trophy Contest. The first had been used by Agello to establish the previous record. In contrast to the

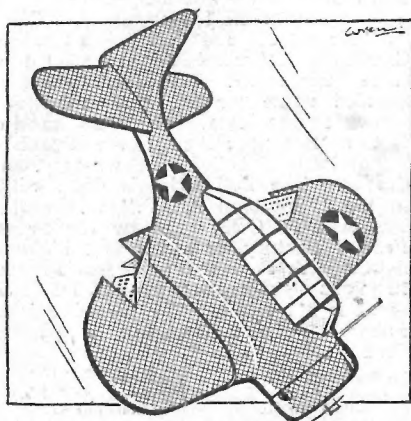
FAMOUS AIRCRAFT—IX



THE MACCHI-CASTOLDI 72—1934

Rolls-Royce method of squeezing the greatest power out of a unit of given size by increasing the octane value of the fuel and the boost pressure, the Fiat engineers placed two 12-cylinder motors back to back and so produced a 24-cylinder motor of double power. The crankshaft of the rear unit passed through the hollow crankshaft of the front unit. These two shafts drove two concentric oppositely rotating airscrews. The output of the Fiat A.S.6 motor was boosted to 3,100 h.p. The all-up weight of the Macchi-Castoldi was 6,660 lb. Italy has made little use of her high-speed experience since.

ODDIDENTIFICATION—CIV

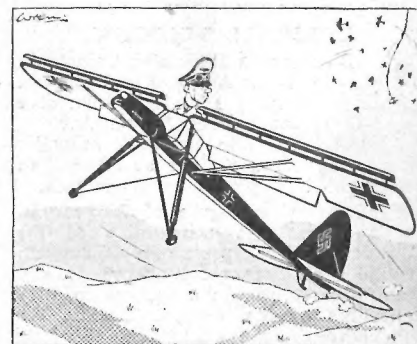


The Douglas A-24, The Dauntless

- DO YOU KNOW?—LIII**
1. Who built the Fort, Fox Moth, Fortress, Falcon, and the Firefly?
 2. Two two-motor U.S. Navy flying-boats which can carry two torpedoes?
 3. The present duties of the (i) Whitley, (ii) Lysander, (iii) Battle?
 4. One six-motor aeroplane flying in (i) France, (ii) Germany, (iii) Russia?
 5. Three Consolidated transports developed from military aeroplanes?
 6. The first aeroplane to be fitted with a Napier Sabre motor?
 7. The builders of the engine and aeroplane called (i) Peregrine, (ii) Whirlwind?
 8. The ornament of the North American Mustang?
 9. The name of the Fairchild AT-14?
 10. A four-motor German transport with inverted gull wing?

- ANSWERS TO "DO YOU KNOW?"—LII**
1. (i) Republic Thunderbolt, (ii) Martin Marauder.
 2. Westland Whirlwind I.
 3. The DB-5F has no nose turret; a streamline transparent nose is fitted.
 4. 1941. The year 2001 of the Japanese calendar.
 5. Grumman Tarpon I.
 6. (i) Beaufort, (ii) Beaufighter, (iii) Hampden.
 7. Gotha 242, Heinkel 177, Messerschmitt 323, Focke-Wulf 58.
 8. Two, in the wing roots.
 9. Henschel Hs 129, Messerschmitt 323.
 10. D.H.98 Mosquito; D.H.88 Comet.

ODDIDENTIFICATION—CV



The Fieseler Fi 156K Storch

THE SPOTTERS' GLOSSARY OF AERONAUTICAL TERMS

VEE MOTOR.—An aero-motor with two banks of cylinders arranged in the form of a "V," either upright or inverted.

VEERING.—A clockwise change of wind.

VELOCITY.—Rate of motion along a defined path.

VENT.—The central hole in the canopy of a parachute which promotes stability through the escape of superfluous air pressure.

VENTURI TUBE.—A tube made with a gradually reduced cross section about its centre which speeds up fluid flow through the tube at that point and so produces suction.

VERTICAL AXIS.—Is the normal upright axis when the longitudinal and lateral axes of an aeroplane are horizontal.

VISCOSITY.—The stiffness of a fluid, or the converse of fluidity.

VISIBILITY.—The distance at which objects can be clearly seen. Fog and haze produce poor visibility.

VOLUME (lighter - than - air craft).—The capacity or displacement of the envelope of an airship or balloon.

VORTEX.—A fluid in rotational motion, such as a whirlpool.

WAKE.—That part of a fluid, such as air, in which the pressure head has been changed by the passage through

it of a body, such as an aerofoil.

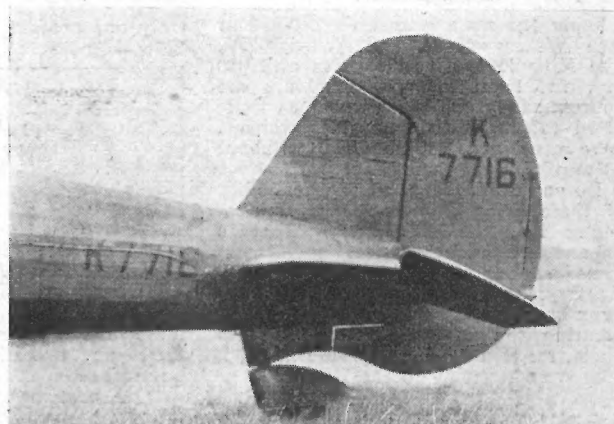
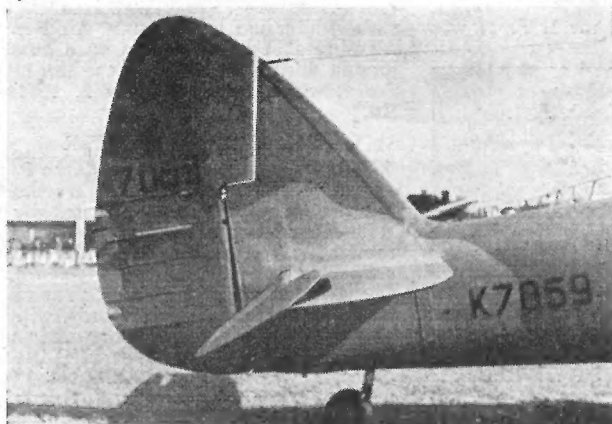
WARM FRONT.—A body of warm air advancing over a mass of cold air. Being forced upwards, it expands. Its moisture tends to condense in the lower temperatures at height, clouds form and rain is likely to fall.

WARNING.—Advance notice of the approach of a rapid change in meteorological conditions.

WASH-IN.—An increase of the angle of incidence of a wing towards the tips.

WASH-OUT.—A decrease of the angle of incidence of a wing towards the tips designed to delay tip stalling.

(To be continued).



WHERE AND WHAT?—Two more problems to test your knowledge. Last fortnight's problems were the transparent nose bomb-aiming compartments of (left) the de Havilland Mosquito IV and (right) the Douglas Boston III.

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